Problematic Areas: the Bases for New Technologies

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Abstract— This paper argues that new technology of the future is based on the problems identified by the present day engineering undergraduates in the current social structure and administrative system. Some problems given by young minds are analyzed to support that new technologies can be based on the identification of problems faced by the current society. The focus is on the problem rather than the solution itself. New problems are the bases for new technologies.

I. INTRODUCTION

Young minds can give birth to new ideas. Engineering undergraduates can, especially, give technology related solutions to the problems of everyday life in the present society. Society has been affected a lot by globalization, television, internet and rampant use of electronic gadgets. In fact, earlier the new technologies were based on the observation of natural phenomena and processes. But now, the basis for new technology is the modern man's desire to automate everything possible and make life easier and more comfortable. In fact Einstein himself confessed, ``When I examine myself and my methods of thought I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge'' (Clark 1971:118). This paper analyzes the problems identified by engineering undergraduates of an autonomous engineering college in Israna (Panipat), Haryana; and the implications thereof.

II. RELATED WORK

The research material in the field of emerging technologies available on the web has been reviewed (References - 5, 6, 7, 8).
A. In the field of Computer Science:
i. IEEE Computer Society/ 13 Top Trends in 2013 – As per the IEEE Computer Society, the following are the problems for which technological innovations are required: Internet of Things; Cybersecurity; Big Data Visualization; Cloud Computing in Science & Engineering; Mobile Computing Meets the Cloud; Internet Censorship and Control; Interactive Public Displays; Next-Generation Mobile Computing; 3D Imaging Techniques and Multimedia Application; Safety Critical Systems: The Next Generation; Reliability; Haptics in Rehabilitation; and Multicore Memory Coherence.

ii. MIT Technology Review 2013 – The MIT Technology Review has thought of the most frustrating, intractable, or simply annoying problems that can be imagined and the technology needed to fix them. The attempt is to look for technologies that will expand the scope of human possibilities. Problem1 (Deep Learning): How to build a truly intelligent computer: one that could understand language and then make inferences and decisions on its own. Extending deep learning into applications beyond speech and image recognition will require more conceptual and software breakthroughs, not to mention many more advances in processing power. Building a Brain and Managing Big Data are the immediate challenges. Problem 2 (Ultra-Efficient Solar Power): Doubling the efficiency of solar devices would completely change the economics of renewable energy - an affordable device that produces more than twice the solar power generated by today's panels. Problem 3 (Big Data from Cheap Phones): Collecting and analyzing information from simple cell phones can provide surprising insights into how people move about and behave—and even help us understand the spread of diseases. Epidemiologists can use the towers to transfer information about the spread of epidemics. Problem 4 (Temporary Social Media): Messages that quickly self-destruct could enhance the privacy of online communication and make people feel freer to be spontaneous. One essential aspect of privacy is the ability to control how much we disclose to others. The weight of our digital pasts is emerging as the central privacy problem of our time. Problem 5 (Smart Watches): How to make a watch that would make the information of the mobile available to the user without actually carrying one? Problem 6 (Memory Implants): How to make a patient with severe memory loss get help from an electronic implant? In people whose brains have suffered damage from Alzheimer's, stroke, or injury, disrupted neuronal networks often prevent long-term memories from forming. How to restore the ability to create long-term memories by implanting chips in the brain? Problem 7 (The Blue-Collar Robot): The problem is to create a more human-like robot. Problem 8 (Additive Manufacturing): How to make jet parts using 3D technology? Problem 9 (Prenatal DNA Sequencing): How to know the genetic destiny of your unborn child? Problem 10 (Super grids): How to make grids that would make distribution of electric power more economical and equal?
B. In Electronics Engineering – Emerging Technologies in the Energy Industry by Kristen Hall-Geisler (2013): The energy

industry involves fuel like coal, diesel, solar and wind power. Energy sources like natural gas also come under this. How to make the energy industry cost-wise and environment-wise? New-school technologies are required to do the following: Cleaning Up Coal; Cram Energy into an Electric Car; Streamline the Turbine; Harnessing the Motion of the Ocean; Get Your Own Grid; Clean the Fracking Water; Soak Up the Sun; Bug Fart Power!; Air-Breathing Battery; De pollute Diesel.

C. Civil Engineering - EPA United States Environmental Protection Agency: Technologies for Waste water Treatment and In-Plant Wet Weather Management

D. Emerging Technologies in India: Mobile device battles; Mobile applications and HTML 5; Personal cloud; Enterprise app stores; The Internet of Things; Hybrid IT and cloud computing; Big Data; Analytics; In memory computing; and Integrated ecosystems

III. METHODOLOGY

The engineering students were given the task of identifying problems that the State of Haryana has and give their views on how to solve the problem – as engineering undergraduates.

IV. DATA ANALYSIS & INTERPRETATION

The problems identified by the subjects are presented in this section.

Problem 1: Domestic Violence

Domestic violence against women is widely prevalent in Gurgaon. As many as 22 cases of domestic violence have been reported till February 2013. According to Women and Child Welfare department about 20 cases on an average are reported every month in the district. Last year a total of 181 such cases were reported from various parts of the State. However social activists claim that the number of cases of violence against women within four walls of homes is much higher. Only a few cases are reported as women fear violence from in-laws and due to lack of evidence. If we look into the cases of domestic violence some of the victims lost their cases due to lack of evidence. There is a need for technology to capture evidence of domestic violence in a way that is not known to the victimizer.

Problem 2: Prevention of Rape

Nineteen rapes were reported in the September 2013 in Haryana. In a recent case, a 13-year-old girl was allegedly raped by a food vendor outside her school in Fatehbad for over four months. The accused allegedly used to lure the teen with fruits and then rape her. Providing security and peace of mind to the women population is extremely essential for the betterment of the society. How can technology help a rape victim to prevent the crime?

Problem 3: Increasing Number of School Dropouts

There is an increase in the number of school dropouts of late. Their percentage has increased a lot, mainly due to parental pressure. The poor, due to lack of education and money think that it's better to make their children work and earn money instead of school education. This gives rise to child labor. The parents do not realize that with better education their children will be able to earn more money and will be able to provide

them a comfortable lifestyle. Education will make their minds productive instead of making them a devil's workshop. Education is important to keep their mind off poverty and terrorist activities. What kind of technology would help change the mental makeup of the illiterate parents?

Problem 4: Damage caused by Pesticides and Herbicides in Agriculture

Dependency of farmers on harmful pesticides and herbicides is very harmful to the crops. Harmful pesticides and herbicides though helpful for some crops end up destroying the other crops and gives rise to chemical level of soil, thus destroying soil fertility. It can also end up killing the useful insects required for the growth of plants. Herbicides and pesticides also deplete the earthworm population required to increase soil fertility. What kind of technology can be used to overcome this problem?

Problem 5: Effectiveness of the Welfare Schemes for Girl child

Female feticide in Haryana has not only led to an alarming fall in male-female ratio and has added many cruel dimensions to the nature of violence and crime and is even causing great disturbances and imbalances at the family level and interpersonal relationships. The situation has worsened since 1991, particularly 0-6 age group. All districts in Haryana except 2 record a child sex ratio of less than 850 girls to 1000 boys. Out of bottom ten Kurukshetra just has 780 girls per 1000 boys. (Data by www.hindustantimes.com) What kind of technology can be used to prevent female feticide?

Problem 6: Maximum Utilization of Limited Resources

There is unequal distribution of solar energy, biogas and wind energy and hydro power – among various parts of Haryana. How can we use technology to ensure that all parts of the State get equal share of the resources?

Problem 7: Single Use of Electrical Wires for Power Supply

There is a lot of wiring done for power supply. Can we use the electric wires to communicate like we do with telephones? How to utilize the existing power supply systems for transmission of sound waves for communication purposes?

Problem 8: Public Distribution Scheme

During the preliminary survey within a sample of BPL families in a part of Haryana, it has been gathered that most of the time all those families are not receiving their allotted amount as sanctioned by the government. Reasons are of many types: sometimes supply is short; sometimes concerned person is absent; sometimes shortage of required money in hand of consumer; and sometimes the consumers are being debarred from the scheme due to want of change amount. We need new technology to ensure fool-proof distribution of provisions to the poor families.

Problem 9: Education of Girl Child

Education of girl child – women form 50% of voters – has been a neglected aspect due to societal attitudes and patriarchal system. We need new technology to change the attitudes of people towards girl child education; and promote education of girl child.

Problem 10: Banks for Villages

People in villages don't have much knowledge about financial transactions; and are not able to reach banks. What kind of technology need to be used to make banking services accessible to the remote villages where illiterate and poor people live?

Problem 11: Crime Rate against Women

There is an alarmingly increase in the crime rate against women – not only in towns but also in villages. What kind of technology needs to be designed to predict and prevent crime against women?

V. THE IMPLICATIONS OF THE IDENTIFICATION OF PROBLEMS FOR NEW INNOVATIVE TECHNOLOGIES

There is a great difference between the problems/ challenges identified by the IEEE Computer society and MIT's Technology Review; and the engineering undergraduates. The problems identified by the young minds are relevant and connected to the actual requirements of the State of Haryana. The problematic areas where the new technology was felt necessary cover a wide range of challenges – related to social and administrative structures of Haryana. The problems identified in the literature are on the other hand mostly connected to making human life more dependent on technology, machines and devices. The new technologies as in the research literature are more on improving upon the existing technologies; whereas the young undergraduates' problems were focused on humans and their social life and the problems that cannot be solved without technology. Technological innovations are the only resort to be taken. In conclusion, new technology of future has to be based on the problems identified by the young engineering undergraduates rather than those identified by the scientific community and business corporate.

REFERENCES

[1]. Clark, R.W. (1971) *Einstein: The Life and Times* New York: Harper

[2]. Gandhi, M.K (1927) *An Autobiography or The Story of my Experiments with Truth* (translated from Gujrati by Mahadev Desai Ahmedabad: Navajivan Publishing House

[3]. (1959) *The Complete Works of Swami Vivekananda* (Vol. V) Mayavati Memorial edition Calcutta: Advaita Ashrama

[4]. 2006) *Selections from the Complete works of Swami* Vivekananda Kolkata: of Advaita Ashrama, Uttarakhand

[5]. www.computer.org/portal/web/membership/13-Top-Trends-for 2013

[6]. www.technologyreview.com/featurestory/513981/Introduction-to-the-10-breakthrough-technologies 2013

[7]. www.timesofindia.indiatimes.com/itslideshow/16964427.cms

[8]. www.en.wikipedia.org/wiki/List-of-Emerging-technologies#IT-and-communications

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